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(*URSUS ARCTOS* L.)
FROM PIT 10, RANCHO LA BREA**

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A SKULL OF THE GRIZZLY BEAR (*URSUS ARCTOS* L.) FROM PIT 10, RANCHO LA BREA

By BJÖRN KURTÉN¹

The grizzly bear, *Ursus arctos* L. ("*Ursus horribilis*" Ord²), has been regarded as a member of the Rancho La Brea late Pleistocene fauna since the report by Merriam (1912) of a large ursine atlas vertebra from the tar pits. The description of this specimen (*op. cit.*, p. 41) reads: "In form, size and position of the opening of the vertebral canal the atlas specimen from Rancho La Brea is nearer to the black bear than it is to the grizzly . . . The animal represented by the ursine atlas from Rancho La Brea was about as large as a grizzly of average size . . ." Thus, it will be seen that the determination as a grizzly bear is based on the size of the specimen, rather than on its morphological characters, which suggest *Ursus americanus* Pallas. The greatest transverse diameter across the anterior articular faces is given as 65.5 mm., which is in excess of the size of the living black bears, and much the same as in the grizzlies. The writer has observed, however, that the fossil forms of *Ursus americanus* reached much greater dimensions than the living ones. In three fossil skulls (from Papago Springs Cave, Arizona; Friesenhahn Cave, Texas; and Samwel Cave, California) the width across the occipital condyles is 60, 64, and 66 mm., respectively. The size of the Rancho La Brea atlas is, thus, within the range found in fossil *Ursus americanus* as well as that of the grizzlies. The black bear is also represented by other specimens from the tar pit fauna. There is, for instance, an excellent skull and jaw of a juvenile individual from Rancho La Brea. Though this skull, being immature, is of small dimensions, the large size of the teeth shows that it belongs to the typical Pleistocene form. The Rancho La Brea black bear was identified by Schultz (1938) with his *Ursus optimus* from McKittrick. This form can only be regarded as a subspecies of the black bear, and at present the best course is probably to unite all the large *Ursus americanus* of Wisconsin age under the oldest name, or *Ursus americanus amplidens* Leidy, which may thus be placed on record for Rancho La Brea.

There is now, however, an indubitable specimen of *Ursus arctos* from the Brea pits. This is a skull, No. 133, in the Los Angeles County Museum. Because of its relatively small size, the skull might be passed off as *Ursus americanus*, but a closer study leaves no doubt that it is

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²On the specific identity of the grizzly and brown bears see, e.g. Erdbrink, 1953, and Rausch, 1953.

Ursus arctos. The specimen, however, does not belong to the typical Rancho La Brea fauna; it comes from Pit 10, the locality at which human remains were discovered (Merriam, 1914). Since this appears to be the only certain record of the grizzly from the tar pits, and it may have a bearing on the age of the Pit 10 assemblage, it seems appropriate to offer some observations on the specimen.

The skull represents a relatively small individual of *Ursus arctos*, and the size of the canine teeth indicates that it is a female. The specimen is of a young adult with somewhat worn cheek teeth. The carnassials have been lost on both sides. The three anterior premolars are totally absent, and there is no trace of an alveolus. The complete absence of all three is rare in the grizzly, but it does occur in some specimens. According to a compilation in Erdbrink (1953, p. 372; original data from Hall, von Middendorff, and Degerbøl), this condition was found in one out of 81 skulls of Alaskan *Ursus arctos*, and in two out of 66 Eurasian *Ursus arctos*. The modal condition is the presence of P¹, P³, and P⁴. In *Ursus americanus*, not a single specimen (out of a total of 100) was found to lack all the anterior premolars (Erdbrink, *op. cit.*, p. 305, on data from Hall), and modally, all four premolars are present.

The skull from Pit 10 exceeds in size the living *Ursus americanus*, but a number of fossil black bear skulls attain similar or greater dimensions. The relative proportions of the skull and the teeth are, however, quite different from those found in the fossil black bears. This is perhaps most clearly demonstrated in a ratio diagram (fig. 1). The measurements are recorded in Table 1. The Recent grizzly is represented by five female specimens, of which four are from Canada and one from Wyoming; the means and observed ranges are given. The table also records the mean values for a small sample of fossil *Ursus americanus amplidens*, which is being discussed in more detail elsewhere (Kurtén, MS), and the means for four Recent black bear skulls from the southern part of the species range (2 from Florida and 2 from Coahuila). The values for the Rancho La Brea grizzly have been used as a standard in the diagram.

It is evident that the Recent grizzly sample agrees very closely in dimensions with No. 133, and all the measurements of the latter fall within the observed range of variation in the Recent female grizzlies, except the rostral breadth; and this is but slightly greater in the fossil skull.

In the fossil *Ursus americanus amplidens* the length of the skull is about the same, but the cheek teeth are smaller, especially M², and the width measurements between the orbits and over the postorbital processes are much greater. It is interesting to note that the relative proportions in the small, Recent *Ursus americanus* are somewhat more "arctos-like"

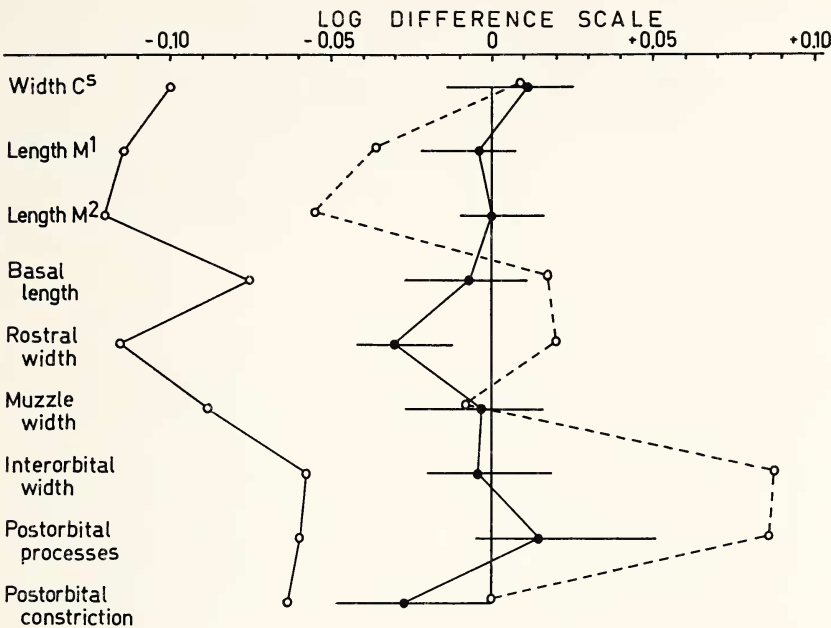


Fig. 1. Ratio diagram of dimensions of bear skulls and teeth. Standard (straight vertical), no. 133, Rancho La Brea Pit 10, *Ursus arctos*. Solid circles and horizontal bars show means and observed ranges of variation in 5 Recent female grizzly bears. Open circles represent *Ursus americanus* means; dashed lines connect those for the fossil sample; continuous lines, those for the four Recent samples.

TABLE 1

Dimensions of bear skulls and upper dentitions (in millimeters).

Measurement	GRIZZLY BEARS			BLACK BEARS	
	Fossil	5 Recent females	Observed	Sample means	
	No. 133	Mean	Range	Fossil	Recent
Cs, width	13.2	13.54	12.8 - 14.1	13.50	10.50
M ¹ , length	23.0	22.78	21.9 - 23.4	21.19	17.73
M ¹ , width	17.0	17.30	16.8 - 17.7	-	-
M ² , length	34.7	34.64	33.9 - 36.0	30.56	26.30
M ² , width	18.8	18.00	16.8 - 19.2	-	-
Skull, basal length	290	284.8	272.0 - 293.0	301.0	244.0
Rostral width (at C ⁵)	75	70.0	68.0 - 73.0	78.5	57.6
Muzzle width (at M ²)	83	82.4	78.0 - 86.0	81.4	67.8
Interorbital width	67	66.4	64.0 - 70.0	82.0	58.8
Postorbital processes	95	98.3	94.0 - 107.0	116.0	83.0
Postorbital constriction	75	70.4	67.0 - 75.0	75.0	64.8

than in the fossil (as shown by the closer approximation to a straight vertical in the diagram). The differences between the fossil and Recent black bears may partly be due to allometric growth.

The comparison between the avifaunas of Pit 10 and the other Rancho La Brea localities suggests that the assemblage of this pit is of somewhat later date, perhaps post-Pleistocene (Howard and Miller, 1939). The presence of an *Ursus arctos* indistinguishable from the living grizzlies may well be of importance in this context. There appears to be no convincing evidence that the grizzly existed here during the Rancholabrean *sensu stricto*, now known to extend to the late Wisconsin. It is indeed questionable whether the species entered temperate North America during the Wisconsin. The two grizzly skulls from Oklahoma described by Stovall and Johnston (1935) are stated to come from river gravels of Pleistocene age, but no more precise date was established. *Ursus procerus* Hay, considered by Stovall and Johnston to be a grizzly, is also an isolated find without any certain clue as regards the age. On the other hand, there are some finds of *Ursus arctos* which are definitely postglacial. It may also be noted that the Californian cave and tar pit faunas of late Pleistocene date, though rich in bears of the species *Ursus americanus* and *Arctodus pristinus* ("*Arctotherium simum*", etc.), do not yield any grizzlies. It seems, therefore, as if the grizzly may have entered this area only at the end of the Pleistocene or in postglacial time.

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Fig. 2. *Ursus arctos* skull, L.A.C.M. no. 133 from Pit 10, Rancho La Brea; lateral, ventral and dorsal views, approximately 0.40 times natural size. Photo by Armando A. Solis.

